Claims:

1. A fuel cell in which plural unit cells each of which is formed by constructing an electrolyte layer on a fuel electrode body and constructing an air electrode layer on the electrolyte layer are connected and in which a fuel supplying member connected with a fuel storing tank for storing a liquid fuel and having a penetrating structure or the fuel electrode body is connected with the respective unit cells to supply the liquid fuel, wherein a liquid fuel occlusion body comprising a porous body and/or a fiber bundle having capillary force is accommodatd in the liquid fuel storing tank described above.

2. The fuel cell as described in claim 1, wherein the liquid fuel storing tank described above is an exchangeable cartridge structure.

3. The fuel cell as described in claim 1 or 2, wherein the liquid fuel is continuously supplied from the cartridge structure described above to the fuel supplying member via a feed comprising a porous body and/or a fiber bundle having larger capillary force than that of the liquid fuel occlusion body described above.

4. The fuel cell as described in any one of claims 1 to 3, wherein capillary force of the fuel supplying member or the fuel electrode

body described above is larger than capillary force of the feed described above.

5. The fuel cell as described in any one of claims 2 to 4, wherein in the fuel cell in which the liquid fuel impregnated in the cartridge structure described above is supplied to the fuel supplying member, the liquid fuel impregnated in the cartridge structure is supplied to the fuel supplying member via a liquid fuel guide tube which is formed by a transparent or translucent resin having visibility and in which a liquid fuel repelling layer is formed at least on a face brought into contact with the liquid fuel; and an exhaustion sign of the liquid fuel supplied from the cartridge structure is detected by visually observing the liquid fuel guide tube through a visible part formed in the cartridge structure.

6. The fuel cell as described in claim 5, wherein a smooth part and a part having fine irregularities are provided on an inner wall of the visible part described above, and by combining them an indicator with which exhaustion of the liquid fuel is detected by a user is provided.

7. The fuel cell as described in any one of claims 2 to 6, wherein the liquid fuel can continuously be supplied in the state that the cartridge structure described above is situated at a lower

position than that of the fuel supplying member described above.

8. The fuel cell as described in any one of claims 1 to 7, wherein the liquid fuel described above is colored.

9. The fuel cell as described in any one of claims 1 to 8, wherein a used liquid fuel storing tank is connected with an end of the fuel supplying member described above and the cartridge structure described above can be used as the used liquid fuel storing tank.

10. A fuel cell in which plural unit cells each of which is formed by constructing an electrolyte layer on a fuel electrode body and constructing an air electrode layer on the electrolyte layer are connected and in which a fuel supplying member connected with a fuel storing tank for storing a liquid fuel and having a penetrating structure or the fuel electrode body is connected with the respective unit cells to supply the liquid fuel, wherein a supplying mechanism for supplying the liquid fuel from the fuel storing tank to the fuel supplying member is provided with a collector body or a valve.

11. The fuel cell as described in claim 10, wherein the liquid fuel storing tank described above comprises an exchangeable cartridge structure.

12. The fuel cell as described in claim 10 or 11, wherein the collector body described above is produced by injection molding or stereolithography or the collector body is constituted from a single layer member.

13. The fuel cell as described in any one of claims 10 to 12, wherein a surface free energy on the surface of the collector body described above is controlled to a higher value than that of the liquid fuel described above.

14. The fuel cell as described in any one of claims 10 to 13, wherein the liquid fuel is continuously supplied from the cartridge structure described above to the fuel supplying member via a feed comprising a porous body and/or a fiber bundle having capillary force.

15. The fuel cell as described in any one of claims 10 to 14, wherein a used liquid fuel storing tank is connected with an end of the fuel supplying member described above and the cartridge structure described above can be used as the used liquid fuel storing tank.

16. The fuel cell as described in claim 10, wherein the valve

described above is opened by pressing the liquid fuel storing tank and/or the fuel supplying member described above to supply a fixed amount of the liquid fuel to the fuel supplying member.

17. The fuel cell as described in claim 10 or 16, wherein the liquid fuel storing tank described above is a cartridge structure having a valve.

18. A fuel cell in which plural unit cells each of which is formed by constructing an electrolyte layer on a fuel electrode body and constructing an air electrode layer on the electrolyte layer are connected, in which a fuel supplying member connected with a liquid fuel storing tank for storing a liquid fuel and having a penetrating structure or the fuel electrode body is connected with the respective unit cells to supply the liquid fuel and in which an end of the fuel supplying member is connected with a used fuel storing tank, wherein the used liquid fuel storing tank is provided with a feed comprising a porous body and/or a fiber bundle having capillary force to discharge a used fuel to the used fuel storing tank via the feed, and a part other than a discharge port via the feed is hermetically closed.

19. The fuel cell as described in claim 18, wherein the used liquid fuel storing tank described above is provided with a used

fuel occlusion body comprising a porous body and/or a fiber bundle having capillary force so that the occlusion body is brought into contact with the feed described above.

20. The fuel cell as described in claim 18 or 19, wherein the feed of the used fuel occlusion body described above has larger capillary force than that of the fuel supplying member described above.

21. The fuel cell as described in any one of claims 18 to 20, wherein the used fuel occlusion body described above has larger capillary force than that of the feed described above.

22. The fuel cell as described in any one of claims 18 to 21, wherein a discharge mechanism for discharging the used liquid fuel to the used liquid fuel occlusion body in the used liquid fuel storing tank described above is provided with a collector body.

23. The fuel cell as described in any one of claims 18 to 22, wherein the collector body described above is produced by injection molding or stereolithography or the collector body is constituted from a single layer member.

24. The fuel cell as described in any one of claims 18 to 23,

wherein a surface free energy on the surface of the collector body described above is controlled to a higher value than that of the used liquid fuel described above.

25. The fuel cell as described in any one of claims 18 to 24, wherein the used liquid fuel storing tank described above is detachable.

26. The fuel cell as described in any one of claims 18 to 25, wherein the used liquid fuel storing tank described above is provided with an openable and closable cover.

27. A fuel cell in which plural unit cells each of which is formed by constructing an electrolyte layer on a fuel electrode body and constructing an air electrode layer on the electrolyte layer are connected, in which a fuel supplying member connected with a liquid fuel storing tank for storing a liquid fuel and having a penetrating structure is connected with the respective unit cells to supply the liquid fuel and in which an end of the fuel supplying member is connected with a used fuel storing tank, wherein assumed is a constitution in which a feed comprising a porous body and/or a fiber bundle having capillary force is provided to discharge used fuel to the used fuel storing tank via the feed, and the used fuel storing tank is opened.

28. The fuel cell as described in claim 27, wherein the used fuel storing tank described above is provided with a used fuel occlusion body comprising a porous body and/or a fiber bundle having capillary force.

29. The fuel cell as described in claim 27 or 28, wherein the feed in the used fuel occlusion body described above has larger capillary force than that of the fuel supplying member described above.

30. The fuel cell as described in any one of claims 27 to 29, wherein the used fuel occlusion body described above has larger capillary force than that of the feed described above.

31. The fuel cell as described in any one of claims 27 to 30, wherein a discharge mechanism for discharging the used liquid fuel to the used fuel occlusion body in the used fuel storing tank described above is provided with a collector body.

32. The fuel cell as described in any one of claims 27 to 31, wherein the collector body described above is produced by injection molding or stereolithography or the collector body described above is constituted from a single layer member.

33. The fuel cell as described in any one of claims 27 to 32, wherein a surface free energy on the surface of the collector body described above is controlled to a higher value than that of the used liquid fuel described above.

34. The fuel cell as described in any one of claims 27 to 33, wherein the used fuel storing tank described above is detachable.

35. The fuel cell as described in any one of claims 27 to 34, wherein the used fuel storing tank described above is provided with an openable and closable cover.

36. The fuel cell as described in any one of claims 27 to 35, wherein the used fuel storing tank described above is provided with a fine aperture part, and a surface free energy on an inner face of the used fuel storing tank and in the vicinity of the fine aperture part is controlled to a lower value than that of the used fuel described above.

37. The fuel cell as described in any one of claims 1 to 36, wherein the liquid fuel is at least one selected from a methanol solution, dimethyl ether (DME), formic acid, hydrazine, an ammonia solution, ethylene glycol and a sodium boron hydride aqueous

solution.

38. A fuel reservoir for a fuel cell which is a cartridge type fuel reservoir detachably connected with a fuel cell main body, wherein the cartridge type fuel reservoir is equipped with a fuel tank for storing a liquid fuel, a liquid fuel discharge part provided at a tip of the fuel tank and having a check valve and a liquid fuel pressing mechanism provided in the fuel tank described above; and the liquid fuel stored in the fuel tank is pushed forward by the liquid fuel pressing mechanism to supply a fixed amount to the liquid fuel discharge part and a fixed amount of the liquid fuel is discharged from the liquid fuel discharge part.

39. The fuel reservoir for a fuel cell as described in claim 38, wherein the liquid fuel pressing mechanism is equipped at the rear of a fuel tank with a rotation operating member constituted by an outer cylindrical member and an inner cylindrical member which is non-rotatably inserted into the inside of the outer cylindrical member, a rachet mechanism provided at a tip part of the outer cylindrical member in the rotation operating member and comprising rachet teeth formed on an inner face of the fuel tank and locking pawls engaged with the rachet teeth, a screw rod inserted into the inside of the inner cylindrical member in the rotation operating member and a piston provided at a tip part of the screw

rod and inserted into the fuel tank so as to be slidable on the inner face in front of a partition wall protruded on an inner face of the fuel tank; a male screw part formed on an outer face of the screw rod screws with a female screw part formed at a front end of the inner cylindrical member, and the screw rod is inserted into an inserting pore of the partition wall and movable only in a longitudinal direction relative to the inner cylindrical member; the screw rod is rotated by a rotating operation of the outer cylindrical member in the rotation operating member to move forward by screwing with the female screw part, and a fixed amount of the liquid fuel is supplied to the liquid fuel discharge part by means of the piston connected with a tip of the screw rod and a fixed amount of the liquid fuel is pushed out from the above liquid fuel discharge part.

40. The fuel reservoir for a fuel cell as described in claim 38 or 39, wherein the fuel tank has at least one oxygen barrier resin layer.

41. The fuel reservoir for a fuel cell as described in claim 40, wherein the oxygen barrier resin layer comprises at least one resin of ethylene·vinyl alcohol copolymer resins, polyacrylonitrile, nylon, polyethylene terephthalate, polycarbonate, polystyrene, polyvinylidene chloride and polyvinyl

chloride.

42. The fuel cell as described in any one of claims 38 to 41, wherein the fuel tank is formed by a material having a light transmittance of 50 % or more.

43. The fuel cell as described in any one of claims 38 to 42, wherein a surface free energy on at least a wall surface of the fuel tank brought into contact with the liquid fuel is controlled to a lower value than that of the liquid fuel.

44. A fuel cell comprising a fuel cell main body and a cartridge type fuel reservoir detachably connected with the fuel cell main body, wherein assumed is a constitution in which the fuel cell main body connects plural unit cells each of which is formed by constructing an electrolyte layer on an outer surface of a fuel electrode body and constructing an air electrode layer on an outer surface of the electrolyte layer and in which the unit cells are connected with a fuel supplying member connected with the fuel reservoir for a fuel cell as described in any one of claims 38 to 43 to allow a liquid fuel to be supplied.

45. A fuel reservoir for a fuel cell which is a cartridge type fuel reservoir datachably connected with a fuel cell main body,

wherein the cartridge type fuel reservoir is equipped with a fuel tank storing a liquid fuel and having a waste fuel recovery aperture part, a liquid fuel discharge part provided at a tip of the fuel tank and having a check valve and a liquid fuel pressing mechanism provided in the fuel tank; the liquid fuel stored in the fuel tank is pushed forward by the liquid fuel pressing mechanism to discharge a fixed amount to the fuel cell main body; and a space part in the fuel tank which is formed by the pressing mechanism is used as a waste fuel recovery tank for used fuel consumed in the fuel cell main body.

46. The fuel reservoir for a fuel cell as described in claim 45, wherein the liquid fuel pressing mechanism is equipped at the rear of a fuel tank with a rotation operating member constituted by an outer cylindrical member and an inner cylindrical member which is non-rotatably inserted into the inside of the outer cylindrical member, a rachet mechanism provided at a tip part of the outer cylindrical member in the rotation operating member and comprising rachet teeth formed on an inner face of the fuel tank and locking pawls engaged with the rachet teeth, a screw rod inserted into the inside of the inner cylindrical member in the rotation operating member and a piston provided at a tip part of the screw rod and inserted into the fuel tank so as to be slidable on the inner face in front of a partition wall protruded on the inner

face of the fuel tank; a male screw part formed on an outer face of the screw rod screws together with a female screw part formed at a front end of the inner cylindrical member, and the screw rod is inserted into an inserting pore of the partition wall and movable only in a longitudinal direction relative to the inner cylindrical member; the screw rod is rotated by a rotating operation of the outer cylindrical member in the rotation operating member to move forward by screwing with the female screw part, and a fixed amount of the liquid fuel is supplied to the liquid fuel discharge part by means of the piston connected with a tip of the screw rod and a fixed amount of the liquid fuel is pushed out from the liquid fuel discharge part.

47. The fuel reservoir for a fuel cell as described in claim 45 or 46, wherein the fuel tank has at least one oxygen barrier layer.

48. The fuel reservoir for a fuel cell as described in claim 47, wherein the oxygen barrier layer comprises at least one resin of ethylene·vinyl alcohol copolymer resins, polyacrylonitrile, nylon, polyethylene terephthalate, polycarbonate, polystyrene, polyvinylidene chloride and polyvinyl chloride.

49. The fuel reservoir for a fuel cell as described in claim

48, wherein the oxygen barrier layer comprises a resin film on which a metal oxide is deposited; the metal oxide comprises one of alumina and silica or both of them; and the resin film comprises one of polyethylene terephthalate, polystyrene, polyethylene, polypropylene and nylon or a composite thereof.

50. The fuel reservoir for a fuel cell as described in claim 48, wherein the oxygen barrier layer comprises a resin film covered with diamond-like carbon (DLC); and the resin film comprises one of polyethylene terephthalate, polystyrene, polyethylene, polypropylene and nylon or a composite thereof.

51. The fuel cell as described in any one of claims 45 to 50, wherein the fuel tank is formed by a material having a light transmittance of 50 % or more.

52. A fuel cell comprising a fuel cell main body and a cartridge type fuel reservoir detachably connected with the fuel cell main body, wherein the cartridge type fuel reservoir is equipped with a fuel tank storing a liquid fuel and having a waste fuel recovery aperture part, a liquid fuel discharge part provided at a tip of the fuel tank and having a check valve and a liquid fuel pressing mechanism provided in the fuel tank; the liquid fuel stored in the fuel tank is pushed forward by the liquid fuel pressing mechanism

to discharge a fixed amount to the fuel cell main body; and used fuel consumed in the fuel cell main body is recovered in a space part of the fuel tank which is formed by the pressing mechanism.

53. The fuel cell as described in claim 52, wherein the fuel cell main body is provided with a used fuel storing tank, and the used fuel storing tank is connected with the waste fuel recovery aperture part having a check valve in the fuel tank.

54. A fuel cell assuming a constitution in which a fuel cell main body connects plural unit cells each of which is formed by constructing an electrolyte layer on an outer surface of a fuel electrode body and constructing an air electrode layer on an outer surface of the electrolyte layer and in which the unit cells are connected with a fuel supplying member connected with the fuel reservoir for a fuel cell as described in any one of claims 45 to 53 to allow a liquid fuel to be supplied.

55. A fuel cell which connects plural unit cells each of which is formed by constructing an electrolyte layer on an outer surface of a fuel electrode body and constructing an air electrode layer on an outer surface of the electrolyte layer, in which a fuel supplying member connected with a fuel storing tank for storing a liquid fuel and having a penetrating structure or the fuel

electrode body is connected with the respective unit cells to supply the liquid fuel and in which an end of the fuel supplying member is connected with a used fuel storing tank, wherein assumed is a constitution in which the used fuel storing tank is connected with the fuel storing tank and in which used fuel is supplied to the fuel storing tank and can be reused as the liquid fuel.

56. The fuel cell as described in claim 55, wherein the liquid fuel storing tank described above is equipped with a concentration sensor of the liquid fuel.

57. The fuel cell as described in claim 55 or 56, wherein a feed is disposed in a connecting part of the used fuel storing tank described above with the fuel storing tank described above.

58. The fuel cell as described in any one of claim 54 to 56, wherein a feed is disposed in a connecting part of the used fuel storing tank described above with the fuel storing tank described above, and a collector body is further disposed.

59. The fuel cell as described in any one of claim 55 to 58, wherein the collector body described above is produced by injection molding or stereolithography or the collector body is constituted from a single layer member.

60. The fuel cell as described in any one of claim 55 to 59, wherein a surface free energy on the surface of the collector body described above is controlled to a higher value than that of the used liquid fuel described above.

61. The fuel cell as described in any one of claim 55 to 60, wherein the used fuel storing tank described above and/or the fuel storing tank described above or a connecting part of the used fuel storing tank with the fuel storing tank is detachable.

62. The fuel cell as described in any one of claim 55 to 61, wherein the used fuel storing tank described above and/or the fuel storing tank described above or a connecting part of the used fuel storing tank with the fuel storing tank is provided with an openable and closable cover.